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M O N S A N T O

~~MCC LAW DEPT.~~

FROM: D. A. Martin - (4-6223/4346) - MCC Engineering - CS6G/N2C

DATE: June 4, 1986 cc:

SUB : ENVIRONMENTAL REPORT:
VANILLIN PLANT, SEATTLE, WA

REF :

TO : J. P. Hyland - B3NA

The enclosed report is based upon conversations with P. E. Jansen, MCC Transportation Manager, and formerly the Eugene Oregon Resin Plant Manager, and with five Seattle Plant retirees, all of whom were present either as new hirees or as former I. F. Lauck's employees when the Vanillin plant was built in 1952.

This report has not been reviewed with any of the above contributors and while it is felt that it accurately represents their inputs, it is subject to revision and additions through subsequent investigation.

David A Martin

D. A. Martin

/bhm

Enclosure
#3440C

HISTORICAL REPORT ON ENVIRONMENTAL ISSUESSEATTLE PLANT3/24/86

This report is based upon a meeting with the following individuals, all of whom are retirees from the plant. The meeting was conducted on 3/24/86 in Seattle, Washington.

<u>Attendees</u>	<u>Initial Employer</u>	<u>Position</u>	<u>Position at Retirement</u>
J. J. Maas	I.F. Laucks	Chemist	Van. Dept. Supervisor
K. Brown	I.F. Laucks	Operator	Van. Dept. Foreman
W. Rundall	Monsanto	Chem Eng	Van. Plant Eng
W. Smith	Monsanto	Operator	Maint. Foreman
H. Hand	Monsanto	Chem Eng	Maint. Supervisor
D. A. Martin	Monsanto	Chem.Eng.	Meeting Coordinator

Historical Perspective

The present plant site was initially utilized as a WWII Italian POW camp. All of the buildings utilized for this purpose have now been dismantled, the most recent being the old maintenance shop, a wooden structure made by the POW's as a recreation hall from packing crates obtained from Boeing aircraft-discards. Several Quonset huts, located where the present employee parking lot is, were dismantled sometime after 1950. In one of these Quonset huts a small Vanillin pilot plant, consisting of primarily batch extraction equipment, was set up and operated periodically for a couple of years. This facility was dismantled in the mid to late 50's.

Laucks' actually had 2 plant sites on E. Marginal Way S. The present Vanillin manufacturing site, which Laucks' had developed as a resin/dry glue manufacturing facility, and a second location which was closer to the city, most likely where the present Northwest Glass Company facility is located. Research laboratories for Laucks were in downtown Seattle.

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Monsanto is believed to have purchased Laucks' business in 1946 and operated it as a subsidiary until 1947 when Laucks was fully absorbed into Monsanto. In 1952 the "uptown" research labs were closed and moved to the Vanillin plant site. The second Laucks' site was sold, although actual timing is unknown. Monsanto also sold Laucks' businesses of mineral spirits and wood resins, and pentachlorophenol manufacture to Pittsburgh Paint & Glass. Again the timing is unknown, but these products were only associated with the second Laucks' site.

Two parcels of the original Vanillin site have been sold over time. Directly to the north, a small strip of land was sold to Kennworth Trucking, and to the south, land plus an associated barge slip were sold to the Port of Seattle. Timing of these sales was about 1968-1970. Prior to selling the southern part of the plant site to the Port of Seattle, it was leased by a metal reclaimer, and old photos showing this area filled with metal drums and other "junk" are of the metal reclaimer's operation. In 1972, this property was developed by the Port as one of the primary loading facilities for the Alaskan pipeline project. At this time, the Seattle plant's south boundary was made more distinct and rectangular, the slip was dredged and enlarged, and the barge loading facilities were constructed.

In 1964 a new resin and glue manufacturing facility, plus associated research laboratories, was constructed at Eugene, Oregon and most of the manufacturing of resins was transferred to this new facility. Glue and resin manufacture at Seattle was terminated in 1971.

Prior to 1965, and consistent with the customary practices at that time, all rain water, process cleanouts, and spillages were discharged into the plant sewers and drainage ditches which in the turn were connected to the Duwamish waterway via the slip on the south side of the plant site. In 1965 the process drains were connected into the Metro Sewer District's sewage system. In 1976 a total plant rainwater and spill collection system was installed with its discharge again to Metro.

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Products Produced

Vanillin¹

Technical Grade

USP Grade

PVO (1 shot)

Paper Sizings Agents

Mersizes

Dry Glues and Resins

Oiled Pentachlorophenols

Urea formaldehyde Resins

Melamine formaldehyde Resins

Resorcinol formaldehyde Resins

Melamine-Urea formaldehyde Resins

Urea-Resorcinol formaldehyde Resins

Cresilic resins

Casin glues

Blood glues

Soybean glues

Tapioca flour glues

Products Warehoused ¹

Skydroul/Pydrauls

Machette

Monsize

Bidim

¹ Indicates current products, or materials from operations

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Raw Materials Warehoused on Site

Dry Glues

Soybeans
Tapioca flour

Dry blood

Melamine

Resorcinol

Carbon Tetrachloride/

Carbon disulfide mixture

Pentachlorophenol

Cresilic Acid/Mixed

cresols

Mineral spirits

Phenol

Casine

Wood rosins

Urea

Formaldehyde

Pine oil

Diesel oil

Lime

Paper Sizing

Sizing Tall Oil Adducts

KOH

Vanillin¹

Spent Sulfite

Liquor AC

 CuSO_4 NaHSO_4

Pydraul

Acroma Oil/

Penetack Oil

50% NaOH

NaSH

98% H_2SO_4

Versene

Ca Sterate

Isopropyl Alcohol

Acetic Anhydride

Soda Ash

Toluene

Recognized ByproductsVanillin¹

Vanillin Black Liquor (VBL)

VBL Solids

Vanillin Still Bottoms (VSB, VSB-50, or Tars)

Autoclave Solids + Strainer Cleanouts

Dry Glues

None known

Paper Sizing

None known

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Known Plant Disposal Sites

- A. H_2SO_4 Solids: A disposal site is located under what is now the employee change house. This was a one shot disposal, and was necessitated when the H_2SO_4 tank failed. Most of the solids probably were $Ca_2SO_4 + FeSO_4$.
- B. Pilot Plant Equipment: Equipment from the Vanillin pilot was buried in a pit on the front part of the plant site. This burial site would contain small batch tank equipment, and samples & sample jars. The exact location of this site is unknown.
- C. Maintenance pit: A disposal pit of approximately 7' x 18' in size was located directly behind the old maintenance shop and contained small quantities of various pigments used in plywood glue testing, and probably some shop items. It was not used after the late 60's, and was buried when the building was torn down.
- D. VBL and VBLS Temporary Storage Pond: A shallow diked area was constructed where the present lab and adjacent open area is. Duration of usage was for about two weeks in 1979. The area was covered over with bark and gravel.
- E. Guiacol Disposal area: From 1953-1963 small quantities of guiacol from the oil distillation area were collected in drums and then drained onto the sandy ground for evaporation. This material was disposed of in the SW corner of original tank farm, adjacent to Duwamish slip. This practice was discontinued in 1963, and the total volume generated is estimated to be ≈ 1000 gal - 1500 gal. This area was covered with concrete as part of the spill control system.

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Spills/Washouts

Overview: Vessels in the plant have overflowed at some point in time in the plant's history. This material either went into the ground, was discharged to the Duwamish Slip via the plant's sewer system, or sent to the Metro system after 1965.

Noted Incidents/Quantities:

Mersize: Product and adduct: Underneath the S. track spur pockets of solid mersize adduct or final mersize product have been found. The source of this material is railcar overflow/spillages, but the total quantity of material located there is unknown.

Carbon Tet/Carbon Disulfide: This material was used in the manufacture of soybean glues. It was received premixed in 50 gal drums, and any spillage was from leaking drums inside of box cars. The location of any such spillage would have been alongside the southside of the DC Center.

Formaldehyde: The formaldehyde tanks required periodic cleanout to remove the polymerized paraformaldehyde. These tanks were located just east of the new shop/old mersize labs on a concrete slab. Washout was to the Duwamish slip. Total quantity is unknown, but frequency was not often maybe once or twice per year.

Glue Labs: All sample disposal was to the plant sewer system.

CuSO₄: CuSO₄ has spilled onto the plant site over the years. Sources have been from leaking wood tanks, broken lines, line pluggage cleanouts, overflowing of tanks, and boxcars with broken bags. The primary location of such spillage was the autoclave pit area and that area which is directly behind and to the south of it. All spillage inside of the building went to the plant sewer system. Outside spillage would have been absorbed onto the ground. Total quantities are not estimatable.

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Mersize Manufacture: The mersize manufacturing area, which is now the plant maintenance shop, has at one time or another been covered in mersize. Most was cleaned up after the spill and disposed of off site.

Cleanout of vessels was first by physically removing solids, with their disposal to a sanitary landfill, and then followed by a NaOH wash which was discharged to the sewer system.

Resin Manufacture: Cleanout of this equipment or of spills was by manually collecting the solids and sending them to a sanitary landfill. Quantities unknown.

Air Compressors:

Pydraul AC (57% Arochlor 1254) was used as a lubricating fluid in the air compressors until 1971 when it was replaced with non-Arochlor based Pydraul. The airlines from the compressors required occasional cleanouts and the debris from this operation was collected and disposed of off site. Any incidental spillage of Pydraul AC occurring during routine maintenance and normal operation of the air compressors would have been washed to the plant sewer system. The only exception would be occurrences associated with two Chicago-Pneumatic (CP's) compressors which were installed in 1970 and were located in an unpaved area. The operating area around these compressors, and beneath associated air lines, was paved with concrete as part of the 1976 spill control plan. The compressors themselves were taken out of service in 1981, and physically removed from the plant site in 1982 - 1983.

Monsize Spillage: Monsize, a paper sizing product, which is currently received by railcar, is unloaded into the 4 old phenol tanks, and then reloaded into tank trucks for delivery to pulp mills. Any spillage has been discharged to Metro via the Spill Control System.

Phenol spills: Phenol spills were washed to the ground. Most spills occurred at the rail car unloading site, spur #2 directly across from the S.E. corner of the DC bldg.

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Pine Oil/Diesel Oil: This material was stored on the South side of D.C. bldg. and the only known discharges of these was the final washout/clean up. This material went onto the ground.

VBL: VBL has been inadvertently discharged to the Duwamish Water Way. The Spill Control system of 1976 eliminated most of these discharges.

Plant Practices

Weed Control: Total raffinate (non-clarified VBL) was periodically discharged onto the ground directly north of the autoclave area as a means of weed control.

CuSO₄ to Cooling Tower: CuSO₄ was added during the 60's to the cooling tower for algae control. About 1-2 lbs was added each month. Overflow from the cooling tower was to the Duwamish water way.

Chromates to Cooling Towers: Chromates were added to the cooling tower as a means of algae control. This practice was discontinued by 1974. Overflow, of the cooling tower was to the Duwamish waterway.

Septic Tank: A septic tank, located north of the D.C. bldg., was used for sanitary waste until the mid 60s.

Special Items:

PVO Manufacture: A one time PVO run was made in 1973. PVO is an intermediate for L-DOPA utilizing Vanillin and Acetic Anhydride as the primary raw materials. Considerable difficulty was encountered during this run including a sizeable spill of Acetic Anhydride. Manufacture was limited to the USP Vanillin building, and some traces of PVO may be still in this facility.

'Oiling' and use of Pentachlorophenol: Penta was received in 100 lb fibre packs via rail cars, and total receipts averaged about 1 railcar/month. Originally, holes were poked into the drums and oil was added. This method of 'oiling' was unsatisfactory and later a ribbon mixer was installed and oil and penta were mixed in this manner. This operation was always done inside of the D.C. bldg.

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The railcars of Penta were unloaded on the south side of the D.C. bldg. Bag dust collectors were located on top of the center bay of the D.C. bldg. for collecting and recycling of the Penta dust generated while 'oiling'. The 'oiled' Penta was for a short period of time added directly to the resins as an insecticide but the majority of the oiled penta produced was shipped directly to the user's facility in 55 gal drums. Spillage was minimal, and all bags and drums were incinerated.

The bag collectors were not completely efficient though, as there was a 'penta' odor associated with the tar roof of the D.C. bldg. This roof was replaced after termination of the resin operation and the waste materials were disposed of off site.

VBL Disposal: Prior to developing a byproduct market for the VBL, this material was discharged to Puget Sound in the strait of Juan de Fuca. Prior to 1968, this stream was an non-clarified VBL, that is, the copper and calcium salts had not been removed. The material was taken by barge to this area and dumped. As of 1976 all dumping ceased.

VBL Solids Disposal: VBL solids have routinely been disposed of at off-site locations.

Vanillin Still Bottoms: Approximately 1 lb of Still Bottom solids per lb of vanillin are generated. These solids are primarily phenolic in nature but exact composition has not been determined. These solids have routinely been disposed of at off-site locations. Currently these solids are disposed of at either the Arlington Toxic Waste landfill, which has been used since 1979, or are sold to a local pulp mill as a hog fuel. Sale of this byproduct for its fuel value was initiated in 1984 and is the primary disposal method currently practiced.